

REMARKS AND ARGUMENTS

Claim Rejections - 35 USC § 112

The Examiner rejected claims 12, 15-19, 33 and 35-41 under 35 U.S.C. 112, first paragraph. The examiner rejected independent claims 13, 33 and 38 because he believed that the newly added limitation "reusable" lacked support in the originally disclosed specification. Claims 15-19, 35-37 and 39-41 were rejected as depending from these claims. Although applicant does not necessarily agree with the examiner's rejection, claims 13, 33 and 38 were amended to remove the reusable term.

Claim Rejections - 35 USC § 102

The Examiner rejected claims 13, 15-19, 33 and 36-38 under 35 U.S.C. 102(b) as being anticipated by US 6329224 to Nguyen (hereafter "Nguyen"). Of these claims, 13, 33 and 38 are independent claims from which the remaining claims depend. Independent claims 13, 33 and 38 have been amended herein to further distinguish them from Nguyen and to more fully describe the present invention.

Claim 13

Claim 13 has been amended herein so that the upper and lower sections are provided with "a film between said semiconductor devices and said upper and lower sections." This claim was further amended so that the matrix material is "contacting said film" and the embedded semiconductor devices are removed from the cavity "by releasing said film and said

upper and lower section from said coating material and said semiconductor devices leaving said coating material uncovered."

These limitations, and the other limitations of claim 13, are not taught by Nguyen. Claim 13 teaches a simple method for coating an LED, while Nguyen teaches a complex method of coating a semiconductor chip that requires a number of features and structures beyond what is needed in the present invention, most of which are not applicable to the present invention. For example, the method and devices in Nguyen call for the use of frame for holding the semiconductor chips

The system also includes a large number of disposable frames 72...[I]t should be appreciated that a large number of such frames are actually employed...[E]ach batch of microelectronic assemblies is processed through the system in one frame and that frame is destroyed at the end of the processing operations.

Along with the frame, dielectric sheets 86 (also referred to as tapes) are used having numerous bond cites that LED 100 are mounted to. (col. 6, lines 60-65). Each tape also has a large number of electrically conductive flexible metal leads 92 running between the LED and connected to terminals 88 on the tape, as well as a set of bond windows 94 extending through the tape. (col. 7, lines 4-7). Each tape 86 is attached to a frame 72 with adhesive tapes. Additional features are included such as elastomeric pads 98 that form a porous structure at each bond site. (col. 7, lines 30-36). After the leads have been bonded a top cover layer 110 is applied over the top surface 26 of the tape frame, with the layer 110 comprising a polymeric sheet such as a solder mask layer. A similar bottom cover layer 112 is applied to the bottom surface of the

microelectronic microelectronic assemblies, i.e. on the back surfaces 106 of chips 100 and is also applied to the bottom surface 78 of the tape frame structure. This entire tape frame structure is then placed between the top and bottom fixture elements 20, 22 to form the mold.

The Nguyen arrangement is much more complex than the invention in claim 13, and of equal importance, the devices resulting from the fabrication process in Nguyen have layers from the frame structure remaining on the LEDs. In Nguyen, after introduction of a liquid encapsulant and curing, the chips are separated into individual units 120, with a portion of the tape 86 remaining on each. In different embodiments, a portion of the top layer 110 and bottom layer 112 can also remain the chips. The top cover layer can remain in place as a solder mask layer on the top surface of the assembly. (col. 10, lines 46-55) In the embodiments of Nguyen, there remains some additional layer on top of the cured encapsulant, which can impact the emission characteristics in the case of LEDs, as well as heat spreading or current spreading.

In claim 13, the film and the upper and lower sections are released from the coating material and the semiconductor devices, leaving the coating material uncovered. There are no layers remaining that could interfere with the operation of the semiconductor device. Nguyen does not disclose or teach this limitation. These limitations along with the newly added limitations of film between said semiconductor devices and rigid upper and lower sections, place claim 13 in condition for allowance.

Because Nguyen does not teach all of the limitations of Applicant's claim 13, the claim is not anticipated by the reference. Claim 13 is otherwise allowable.

Claims 15-19 depend from allowable claim 13 and, as such, are also allowable.

Claim 33

Independent claims 33 contains amendments similar to those of claim 13 and in particular now includes limitations to a film between the LEDs and said upper and lower sections, and detaching the upper and lower sections from the matrix material, leaving the matrix material uncovered. Applicant submits that this claim is not anticipated by Nguyen for the same reasons as those discussed above with reference to claim 13.

Claim 33 has further limitations not disclosed or taught by Nguyen. These include the limitation of "one of the said contacts covered by said film" and wherein the matrix material is introduced into said mold "leaving said film covered contact uncovered by said matrix". When the cured matrix material and LEDs are removed from the formation cavity, "said contact uncovered by said matrix material is accessible for electrical connection." Support for this amendment can be found in FIGs. 13 through 18, and page 23, line 25 to page 25, line 12.

The method described in Nguyen does not contemplate leaving the LED contacts uncovered. Instead, the method relies on the inclusion of conductors through the matrix (e.g. leads 92 in FIG. 3, leads 385 in FIG. 10) to provide electrical contact through the matrix material, to the LEDs.

Because Nguyen does not teach all of the limitations of Applicant's claim 33, the claim is not anticipated by the reference. Claim 33 is otherwise allowable.

Claims 36 and 37 depend from allowable claim 33 and, as such, are also allowable.

Claim 38

Claim 38 contains limitations similar to those in claim 13, related to removal of the upper and lower sections, and leaving the coating material uncovered with the sheet of coating material and semiconductor chips is removed from the formation cavity. Claim 38 is allowable over Nguyen for the same reasons as claim 13.

Applicant respectfully requests the withdrawal of the rejection of claim 13, 15-19, 33 and 36-38 for at least the reasons discussed above.

Claim Rejections - 35 USC § 103

The Examiner rejected claims 35 and 39-41 under 35 U.S.C. 103(a) as being unpatentable over Nguyen in view of US 6252254 Soules et al.

Claim 35 depends from allowable claim 33, and claims 39-41 all depend from allowable claim 38. As such, these dependent claims are also allowable.

Applicant respectfully requests the withdrawal of the rejection of claims 35 and 39-41 for at least the reasons discussed above.

Appl. No. 10/666,399
Response Dated January 22, 2008
Office Action Dated July 19, 2007

CONCLUSION

Applicant submits that claims 13, 15-19, 33 and 35-41 are in condition for allowance and requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



Jave G. Heybl
Attorney for Applicant
Registration No.

January 22, 2008

KOPPEL, PATRICK, HEYBL & DAWSON
555 St. Charles Drive, Suite 107
Thousand Oaks, CA 91360
Phone 805 373 0060,
Fax 805 373 0051